



Thermocouple Power Meter

Model 436A

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436A

436A Power Meter

The HP Model 436A Power Meter is a general purpose digital power meter intended for manual and automatic RF and microwave power measurements. It is compatible with the entire series of 8480 power sensors. Depending on which power sensor is used, the 436A can measure power from -70 dBm (100 pW) to $+44$ dBm (25W) at frequencies up to 26.5 GHz.

The logically organized and uncluttered front panel, and the convenience of push-button operation and digital display make the 436A both easy to interpret and easy to use in any application. The auto ranging capability allows for "hands-off" operation.

The 436A measures either absolute or relative power. It displays absolute power in either watts or dBm, and relative power in dB.

The 436A Power Meter also features optional programmability; both Hewlett-Packard Interface Bus (HP-IB) and BCD interfaces are available. These interfaces allow full remote control of all power meter functions (CAL function can be programmed to either 100 percent or the CAL factor which has been manually set on the front panel). These options may be added by the user at a later time.

436A Specifications

Frequency range: 100 kHz to 26.5 GHz (depending on power sensor used).

Temperature range: 0–55°C

Power Range (display calibrated in watts, dBm, and dB relative to reference power level).

With 8481A, 8482A, 8483A, 8485A sensors: 50 dB with 5 full-scale ranges of -20 , -10 , 0, 10, and 20 dBm (10 μ W to 100 mW).

With 8481B or 8482B sensors: 44 dB with 5 full-scale ranges of 10, 20, 30, 40, and 44 dBm (10 mW to 25 W).

With 8481H or 8482H sensors: 45 dB with 5 full-scale range of 0, 10, 20, 30 and 35 dBm (1 mW to 3 W).

With 8484A sensor: 50 dB with 5 full-scale ranges of -60 , -50 , -40 , -30 , and -20 dBm (1 nW to 10 μ W).

Accuracy

Instrumentation

Watt mode: $\pm 0.5\%$.

dBm mode: ± 0.02 dB ± 0.001 dB/°C.

dB (REL) mode: ± 0.02 dB ± 0.001 dB/°C.

* Specifications are for within range measurements. For range-to-range accuracy add another ± 0.02 dB.

Zero: automatic, operated by a front-panel switch.

Zero set: $\pm 0.5\%$ of full scale on most sensitive range, typical; ± 1 count on other ranges.

Zero carry over: $\pm 0.2\%$ of full scale when zeroed on the most sensitive range.

Power reference: internal 50 MHz oscillator with Type N female connector on front panel (or rear panel, Option 003 only).

Power output: 1.0 mW. Factory set to $\pm 0.7\%$ traceable to the National Bureau of Standards.

Accuracy: $\pm 1.2\%$ worst case ($\pm 0.9\%$ rss) for one year.

Supplemental Characteristics

Noise (typical, at constant temperature, peak change over any one-minute interval): 20 pW (8484A); 40 nW (8481A, 8482A, 8483A, 8485A); 40 μ W (8481B, 8482B); 4 μ W (8481H, 8482H).

Drift (1 hour, typical, at constant temperature after 24-hour warm-up): 20 pW (8484A); 10 nW (8481A, 8482A, 8483A, 8485A); 10 μ W (8481B, 8482B); 1 μ W (8481H, 8482H).

Response time typical, measured at recorder output, 0 to 99% of reading:

Range 1 (most sensitive range) <10 seconds

Range 2 <1 second

Ranges 3 through 5 <100 milliseconds

Cal factor: 16-position switch normalizes meter reading to account for calibration factor. Range 85% to 100% in 1% steps.

Cal adj: front-panel adjustment provides capability to adjust gain in meter to match power sensor in use.

Recorder output: linearly proportional to indicated power with 1 volt corresponding to full scale and 0.316 volts to -5 dB; 1 k Ω output impedance, BNC connector.

RF blanking: open collector TTL; pulls low during meter zeroing. Useful for turning off RF input to sensor during auto-zeroing. BNC connector.

Display: four-digit display with 20% over-range capability on all ranges; analog uncalibrated peaking meter to show fast changes.

Power consumption: 100, 120, 220, or 240 V (+5%, -10%), 48 to 66 Hz, and 360 to 440 Hz; <20 V \cdot A (<23 V \cdot A with option 022 or 024).

Weight: net, 4.5 kg (10 lb). Shipping, 5.5 kg (12 lb).

Size: 134 H x 213 W x 279 mm D (5.2" x 8.4" x 11.0").

Accessories

Furnished: 1.5 m (5 ft) cable for power sensor; 2.3 m (7.5 ft) power cable. Mains plug shipped to match destination requirements.

Available: to rack mount one 436A by itself, order 5061-0057 Rack Mount Adapter Kit.

Ordering Information

436A Power Meter

Option 002: Input connector on rear panel in parallel with front

Option 003: Parallel sensor inputs front and rear panel, reference oscillator output on rear panel only.

Option 004: Delete power sensor cable

Option 022: Digital input/output, fully compatible with HP Interface Bus (HP-IB)

Option 024: Digital input/output BCD Interface

Option 908: Kit for rack mounting one 436A

Option 910: Extra operating and service manual